



## **ES&H STANDARD OPERATING PROCEDURE (ES&H SOP)**

**Title: NORTH SLOPE OF ALASKA AND ADJACENT ARCTIC OCEAN  
(NSA/AAO) CLIMATE PROJECT OPERATING PLAN (U)**

**Location: North Slope of Alaska and Adjacent Arctic Ocean**

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**Document Release or Change History:**

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Review period for this ES&H SOP is: Annually with one month's grace.

Primary Hazard(s) Addressed: Living and working in extreme Arctic climate.

***SIGNATURE PAGE FOR ES&H SOP: SP473406***

*{See copies on file at Sandia and Barrow ARM/NSA Offices}*

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**SANDIA NATIONAL LABORATORIES****PROJECT ES&H PLAN FOR NSA/AAO Climate Project****CONTENTS**

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## 1.0 PURPOSE, SCOPE, AND OWNERSHIP

<b>Purpose</b>	This Project ES&H Plan defines and informs SNL personnel, contractors and other ARM collaborators of ES&H policies and procedures associated with working at the NSA/AAO project site.
<b>Scope</b>	The ES&H policies and procedures outlined in this document cover all ARM North Slope work activities and apply to all ARM project personnel living and working at ARM North Slope project facilities. Other operating procedures are also incorporated as attachments and references.
<b>Ownership</b>	This ES&H plan is owned by Department 6233. Any suggestions for improvements should be directed to the owners: ( <i>W. Einfeld</i> , 845-8314, <a href="mailto:weinfel@sandia.gov">weinfel@sandia.gov</a> ; and <i>D. Horschel</i> , 845-9836, <a href="mailto:dshorse@sandia.gov">dshorse@sandia.gov</a> )
<b>Location of This Plan</b>	The ES&H Plan is located in Department 6233 project files (SNL, NM) and at the North Slope project site office near Barrow.
<b>Appendices</b>	ARM/NSA Safety Briefing Cold Weather Hazards Alternate Buddy System Activity Specific Firearms Safety Plan Bear Safety Plan ARM/NSA Vehicle Use Policy Barrow Office/Duplex Rules Excerpt from DOE Order 232.1 – Occurrence Reporting Instructions

## 2.0 RESPONSIBILITIES

<b>Project Leader</b>	The NSA/AAO Site Manager is responsible for ensuring that personnel who perform work: <ul style="list-style-type: none"><li>• are qualified,</li><li>• have read this plan and those appendices determined by the Site ES&amp;H Coordinator to be relevant to the person's work activities, and</li><li>• have signed the Authorized Users List, and</li><li>• have completed a Site Visit Request.</li></ul>
<b>6200 ES&amp;H Coordinator</b>	The 6200 ES&H Coordinator is responsible for reviewing ES&H documents and providing assistance to NSA/AAO personnel in compliance with Sandia corporate ES&H requirements.

<b>Site ES&amp;H Coordinator</b>	<p>The Site ES&amp;H Coordinator is responsible for the following:</p> <ul style="list-style-type: none"><li>• Maintaining this document at SNL and Barrow offices and at the ARM/NSA web site.</li><li>• Ensuring access of all site personnel to ES&amp;H documents.</li><li>• Communicating training requirements to all site personnel.</li><li>• Recording and reporting accidents and occurrences.</li></ul>
<b>Guests and Visitors</b>	<p>Guests and Visitors may be SNL, DOE, local officials, or other personnel <b>not routinely working on the project</b>. All guests and visitors shall:</p> <ul style="list-style-type: none"><li>• Submit a site visit request with Jean Burstein at the ARM/NSA Sandia Office before arrival at NSA/AAO.</li><li>• Affirm that all relevant ES&amp;H materials posted on the ARM/NSA Web page at <a href="http://www.arm.gov/docs/sites/nsa/documents/esh/index.html">http://www.arm.gov/docs/sites/nsa/documents/esh/index.html</a> (available in hard copy at the site) have been reviewed.</li><li>• Follow all directions given by site personnel.</li><li>• Follow all hazard warnings posted or otherwise instructed.</li><li>• <b><u>Do Not</u></b> operate any project equipment without explicit authorization by the site manager or his designee.</li></ul>
<b>Project Participants</b>	<p>Project participants are SNL employees, SNL contractors, and ARM-program personnel from other collaborating organizations <b>regularly working</b> at the site. These personnel shall:</p> <ul style="list-style-type: none"><li>• Carry out the same actions required of site visitors as noted previously.</li><li>• Become familiar with and adhere to the guidance provided by this document, and any other relevant appendices, operating procedures or additional instructions.</li><li>• Provide feedback and offer improvements with regard to ES&amp;H matters.</li><li>• Report all accidents and occurrences to the Site ES&amp;H Coordinator.</li></ul> <hr/>

### 3.0 TRAINING QUALIFICATIONS

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<b>Job Training/Qualifications</b>	<p>All SNL employee and SNL contractor employees shall remain current in required job related training and skills while working at the North Slope Project Site.</p> <p>Guests and visitors may also be required to undergo training if their work activities at the site warrants such training. This determination shall be made by the Site ES&amp;H Coordinator.</p> <hr/>
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**ES&H  
Training**

All SNL employees and SNL contractors shall be compliant in the SNL mandatory ES&H Training Course ESH100.

**North  
Slope/CART-  
Specific  
Training**

SNL employees and SNL contractors must also complete the following classes that are applicable to their work activities at NSA/AAO facilities. The determination of applicable classes will be made by the Site ES&H Coordinator.

Upon request of the Site ES&H Coordinator, guests, visitors and other ARM personnel will complete and provide evidence of comparable training and/or experience prior to engaging in work activities at NSA/AAO facilities.

<b>Class</b>	<b>Course Number in the ES&amp;H Training System</b>
Employee Basic HAZCOM	HAZ101 I
CART Site Safety Orientation	HAZ103
CPR Training	MED 104
Firearms Training	FST100
First Aid	MED102
Basic Electrical Safety	ELC105, or ELC106, ELC109
R&D Electrical Safety	ELC106 or ELC109
Low-Voltage Facilities	ELC109 or ELC105, ELC106
Lockout Tagout	LTO 112 & 210
Machine Shop Safety	MCH 111
Basic Pressure Safety	PRS 102
Forklift Operator Training	FLK153
Crane, Rigging, Hoisting Training	RGH100
Project equipment	instruction & maintenance manuals for individual equipment
Snow Machine Training	Video in Barrow/Hands-on training in Barrow
All Terrain Vehicle	Hard Copy Safety Briefing in Barrow Hands-on training in Barrow

**Required  
Reading**

This ES&H Standard Operating Procedure and all appendices relevant to the person's work assignment as determined by the Site ES&H Coordinator and are to be found on the ARM/NSA Web pages.

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**Recommended Reading** The following documents provide additional information on ES&H management at NSA/AAO facilities:

Title	Location
SNL Environment, Safety, and Health Manual, MN471001, Latest Edition	Zip Disc at Project Site
Project Preliminary Hazard Screening	Hard Copy at Project Site
CART Equipment Manufacturers Instructions (when needed)	Hard Copy at Project Site
NSA/AAO Operator's Manual	Project Site and NSA Web Site

#### 4.0 DEFINITIONS and ACRONYMS

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<b>AAO</b>	Adjacent Arctic Ocean
<b>Authorized User</b>	Trained personnel who operate equipment, instrumentation, and systems at the North Slope Project Site.
<b>ARM</b>	Atmospheric Radiation Measurement (program)
<b>CART</b>	Cloud and Radiation Testbed
<b>Collaborator</b>	Individual associated with an organization with which ARM has some form of agreement for collaboration with the NSA/AAO CART site
<b>DOE</b>	Department of Energy
<b>ES&amp;H</b>	Environment, Safety & Health
<b>HA</b>	Hazard analysis
<b>LOTO</b>	Lockout Tag Out
<b>NOAA/CMDL</b>	National Oceanic & Atmospheric Administration/Climate Monitoring & Diagnostics Laboratory
<b>NSA</b>	North Slope of Alaska
<b>NSA Facilities</b>	Barrow ARM Facility, Atqasuk ARM Facility Site
<b>NSB</b>	North Slope Borough
<b>OP</b>	Operating Procedure
<b>PHS</b>	Preliminary Hazard Screening
<b>PPE</b>	Personal Protective Equipment
<b>Project Participants</b>	SNL employees, SNL contractors, or other ARM-associated personnel routinely working at the North Slope Project Site.
<b>Remote Location</b>	Work facilities other than the facilities in Barrow and Atqasuk ARM facilities
<b>SOP</b>	Safe Operating Procedure
<b>SHEBA</b>	Surface Heat Budget of the Arctic

<b>Site Visit Request</b>	Written request to SM for site visits before arriving at NSA/AAO Site or on WEB ( <a href="http://www.arm.gov/docs/sites/nsa/forms/barrow_visit.html">http://www.arm.gov/docs/sites/nsa/forms/barrow_visit.html</a> ); should include any requests for accommodations and/or other services. This form must be completed in its entirety.
<b>SNL/NM</b>	Sandia National Laboratories, Albuquerque, New Mexico
<b>SM</b>	Site Manager
<b>TEDS</b>	Training and Education Data System; Training data base that tracks required training of project participants
<b>UIC-NARL</b>	Ukpeagvik Inupiat Corporation - (former) Naval Arctic Research Laboratory
<b>Visitors and Guests</b>	SNL or DOE employees, other ARM project-related DOE Contractor Employees, local officials, visiting scientists, students, dignitaries, etc., visiting or <u>touring</u> the North Slope Project Site and not doing routine work at the site.

## 5.0 HAZARDS IDENTIFICATION

**Animals** - The most serious animal threat on the North Slope comes from polar bears (See the attached Bear Safety Plan.) Rabies is also endemic in the resident fox population. Foxes are to be avoided.

**Chemicals and Hazardous Materials** – Use of chemical and hazardous materials, except for consumer products used in consumer quantities, is not expected to be a common or routine activity at the NSA facilities. Use of all hazardous chemicals and materials is subject to the Site ES&H Coordinator's approval. An MSDS is required and appropriate procedures must be developed as needed for work activities involving hazardous chemicals. (See attached ARM/NSA Safety Briefing).

**Electrically Energized Equipment** – Exposure to unusual electrical hazards is not expected in NSA/AAO project activities. Project participants will perform work according to their training and safety guidelines, keep equipment maintained, and not perform any service or repair to electrical distribution systems or equipment for which they are not qualified and authorized by the SM. Guidelines for instrument electrical maintenance and repair are available in the manuals specific for each instrument. Lockout/Tagout procedures will always be followed when necessary to maintain personal safety during instrument or other system maintenance or repair.

**Extreme Cold with Wind** – This is the most serious hazard associated with work on the NSA/AAO (North Slope of Alaska and Adjacent Arctic Ocean) CART (Cloud and Radiation Testbed) climate research site. The North Slope of Alaska is north of the Arctic Circle at north latitudes ranging from 69° to 72°. The North Slope is covered with ice and snow typically nine months of the year (September-May). During part of November, all of December, and most of January, the sun does not come above the horizon; this is what is referred to as the “polar night.” Particularly during this period, very low temperatures are encountered. The record low temperature at Barrow is 57° F below zero. Even lower temperatures occur on the coastal plain farther away from



the coast. Temperatures in the range of 25° to 45° F below zero are common in winter. On the arctic coastal plain these low temperatures often occur in combination with moderate to high winds. Typical wind chill factors are 60° to 80°F below zero. With these wind chills, exposed flesh freezes in one to two minutes. Excursions to triple digit below zero wind chills are not unusual.

Appropriate clothing, equipment and work policies are necessary to assure outdoor safety under these conditions. When people move around within the populated areas, these cold weather conditions impose surprisingly minor burdens. In such areas, exposure is limited to minutes, and the array of buildings in the populated area reduces the wind at ground level so that the actual wind chill is less severe than in the surrounding countryside. The greatest cold-weather hazard occurs for ARM personnel when working outdoors on the tundra or sea ice for sustained periods.

Appropriate cold-weather clothing includes hooded parkas, insulated pants, thermal underwear, insulated boots, inner gloves and outer mittens, face masks, and goggles (all chosen with appropriate low temperature ratings). The amount of clothing needed at any given time is a judgment call depending upon the prevailing and forecast weather. Overheating can be a significant threat. Overheating caused by overexertion leads to perspiration, which in turn degrades the insulating value of clothing. Upon cessation of exertion, overheating easily turns to hypothermia. Consequently, exertion and protective clothing need to be carefully balanced, and adjusted as needed to minimize or preferably prevent perspiration. Additional equipment required for extended outdoor work activities in cold weather includes first aid and emergency survival supplies, lighting, radio or cellular telephone communications to summon help, and provisions for emergency shelter. (See also, the attached Cold Weather Hazards Safety Briefing.)

Under most circumstances, a buddy system is used for work activities at ARM/NSA facilities. Occasional deviations to this buddy system are covered in the Alternate Buddy System policy included in the appendix material. Alternate procedures include keeping another individual informed as to one's work plans when working alone, contingency planning for transportation equipment failure (snow machine, all terrain vehicle, 4 WD truck etc.), and a cautious avoidance of white-out (extreme low visibility) conditions that promote disorientation. A cellular phone with adequate battery capacity is mandatory for all individuals working alone at NSA facilities that are located away from populated areas.

The determination of the need for survival training for work activities in remote locations (work facilities other than the Barrow and Atqasuk CART facilities) will be made by the SM and the Site ES&H Coordinator on a case-by-case basis. Survival training is not required for routine work activities at the Barrow and Atqasuk ARM facilities.

**Firearms** – Shotguns and slug ammunition are often required as a protective measure when working away from populated areas because of the polar bear hazard; (See the

attached Bear Safety Plan). Firearms hazards can arise from weapon mishandling or malfunction. Training and annual training refreshers are required for all ARM personnel authorized to carry firearms. (See the attached Activity Specific Firearms Safety Plan for a complete description of the policies and procedures for carrying firearms at NSA facilities.)

**Fire Safety** - Fire is a special hazard in Polar Regions both because combustion sources (e.g. portable heaters) are commonplace, and because loss of shelter in many circumstances can be fatal. Fire is a recognized hazard on the North Slope, and the usual safety measures, such as regularly inspecting fire extinguishers and smoke alarms; proper electrical wiring, good housekeeping, control of smoking and appropriate training are to be rigorously exercised. In remote locations where loss of shelter caused by fire would pose a severe threat, backup shelter or survival gear not threatened by fire shall be incorporated into work plans.

**Lasers** - Some instrument components at the CART facilities contain lasers capable of inflicting eye injury. All laser use at the CART facilities will be monitored by the Site ES&H Coordinator. All laser systems will be used in accordance with the manufacturer's instructions and SNL's ES&H Manual. Additional operating procedures for instruments with lasers will be developed on an as-needed basis.

**Mechanical Hazards** - Use of forklifts, cranes or other energized equipment must comply with required safety precautions, inspection and certification. Refer to the SNL ES&H Manual for guidance in these areas. A copy is maintained in zip disk format at the ARM/NSA duplex office.

**Noise Producing Equipment** - One of the instruments at the Barrow CART site is a Radio Acoustic Sounding System (RASS). The RASS incorporates sound source that makes a periodic loud noise during its measurement cycle. This noise source does not pose a hearing loss hazard to site workers engaged in normal work activities at the site. RASS maintenance and repair activities may require that personnel be in close proximity to the sound source. Protective measures should be taken in such situations. The Site ES&H Coordinator should be consulted for the protective measures to be taken prior to working inside the RASS enclosure while the system is energized.

**Non-Ionizing Electromagnetic Radiation** - Some instrument radar systems at the CART facilities emit non-ionization radiation. Exposure levels for persons engaged in normal site activities are non-hazardous since nearly all of the beam energy is directed in the vertical direction. Personnel should obey all signs that have been placed to restrict personnel from areas where non-ionizing radiation may pose a hazard.

**Other Thermal and Environmental Hazards** - Technicians working with soldering irons, electric heat guns or other heat sources may encounter burn hazards. In addition, contact of bare wet skin with extremely cold objects could result in injury. The threat of hypothermia or frostbite in cold weather conditions discussed above must be understood and avoided. No work activities should be carried in closed,

unventilated spaces such as sealed shipping containers since suffocation hazards may exist. Heavy clothing, ice and darkness compound slip and fall hazards at NSA facilities. Extreme care must be exercised while maneuvering slippery surfaces whether on foot or with vehicles.

**Remote work-site hazards** – The distance from prompt emergency assistance, and use of snow machines and all terrain vehicles at remote areas, requires that the work policies outlined in the Alternate Buddy System (included as an appendix) and the transportation policies outlined in the Site Safety Briefing (also included as an appendix) be carefully understood and applied.

**Scaffolds, platforms, portable ladders** - Working at heights always presents the threat of falling if proper precautions are not taken. Workers must assure that they use the right equipment, that it is erected and maintained in a safe manner, and that activities are performed in a thoughtful and safe manner. Typical elevation hazards are compounded under cold and/or icy conditions. (For more information on elevated work surfaces consult the SNL ES&H Manual, Section 4F).

**Transportation** - Most transportation hazards for North Slope project personnel fall within the category of readily recognized hazards involving on-the-road vehicles. Certain restrictions apply concerning the use of project vehicles. See the attached Vehicle Use Policy for more information. Special precautions are required for snow machine or all terrain vehicle transportation to and from CART facilities under cold weather conditions. Transportation by these travel modes to remote work areas carries an injury hazard potential resulting from vehicle turnover or collision with other objects. Vehicle malfunction could result in unanticipated sustained exposure to severe weather conditions as discussed above. See the Site Safety Orientation for policies regarding use of these vehicles. Two other special transportation situations may arise: Charter Aircraft are occasionally used in ARM projects on the North Slope. Special provisions can be made for the use of charter aircraft for personnel transport. Consult the Site ES&H Coordinator or the Site Manager for more information on the use of charter aircraft. Infrequently, travel by small boat is also required. Project personnel traveling via this mode of transportation should insure that adequate personal floatation devices and personnel survival gear is available.

**Working under low and flat light conditions** – Low light level increases the hazard associated with polar bears, transportation and personal navigation. Under low light conditions, special care is required. Note that “flat light” is the diffuse lighting that occurs under cloudy skies especially when the ground is snow covered. Under flat light conditions, there are no shadows cast, and the topography of snow-covered surfaces is impossible to judge. Snowdrifts, and ditches in the snow cannot be differentiated from flat, unbroken snow-covered ground. Extreme care is required when using snow machines and ATVs under these circumstances.

## 6.0 PARTIAL LIST OF EQUIPMENT AND MATERIALS

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- Equipment**
- CART-related Instrumentation
  - Test Equipment
  - Hand and power tools
  - Communication devices
  - Personal Protective Equipment (PPE) - hearing protection, gloves, other cold weather clothing, firearms.
  - Communication devices - phones, cell phones, pagers, 2-way radios, etc.
  - Personal Locator Beacons
  - Vehicles - snow machines, all terrain vehicle, 4W drive, etc.
  - Cold weather survival gear

## 7.0 OPERATING PROCEDURES

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**Introduction** The NSA CART Site Operator's Manual outlines the day-to-day activities at the ARM facilities and includes physical security, house keeping, instrument maintenance, data processing, and other activities. As a result of the complex array of instruments at each of the facilities, the determination has been made that the operation of individual instruments will be carried out in accordance with guidelines outlined in the operation manuals that accompany each instrument. In addition to the manuals for the individual instruments at each of the CART facilities, project personnel will need to read and be familiar with the following work policies and procedures:

Site Safety Orientation  
Cold Weather Hazards  
Alternate Buddy System  
Snow Machine Operation (Video tape)  
ATV – All Terrain Vehicle Operation (Booklet)  
Activity Specific Firearms Safety Plan  
Bear Safety Plan  
Vehicle Use Policy  
Barrow Office/Duplex Rules

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**Equipment Maintenance** Required maintenance procedures for the various climate-monitoring instruments are outlined in the Site Operation Manual and instrument manuals.

## 7.1 EMERGENCY PROCEDURES

### General

The following are general instructions for handling emergency situations at ARM/NSA facilities but not remote facilities. Emergency situations include but are not limited to fire; accident with injury; failure of transportation equipment resulting in exposure to cold weather or bears; wet clothing at a remote site without shelter during the cold season. **Emergency response plans for personnel working at remote facilities distant from Barrow or Atqasuk must be developed on a project-specific basis. Contact the Site ES&H Coordinator for assistance in these situations.**

Step	Action
1	Provide or obtain emergency assistance as required. Medical, Fire, Security, and Search & Rescue numbers are given in the <b>Emergency Actions</b> section below.
2	Secure the hazardous item or area to avoid further harm or damage.
3	Secure the incident area and related equipment, and/or other materials to facilitate a formal investigation at a later time if warranted do not allow interference with the incident area equipment or conditions until the determination of need for, or completion of, an investigation is made.
4	Begin documentation of events - witness statements, incident area photographs, weather conditions and other relevant factors <b>AS SOON AS PRACTICAL</b> , but do not expose individuals to unnecessary additional hazards to do so.

### Emergency Actions

In the event of an emergency in the **immediate vicinity of Barrow** (including the Barrow CART site), carry out the following procedures:

Step	Action										
1	Determine extent and degree of emergency.										
2	Call for any assistance required from available project members. Use cell phone if at a remote site. Barrow Project Office (Bldg. 354 -- duplex): (907) 852-5818 or (907)852-5821										
3	Call local assistance as necessary: <table border="1"> <thead> <tr> <th>Emergency</th><th>Dial</th></tr> </thead> <tbody> <tr> <td>Ambulance (medical assistance)</td><td><b>911</b></td></tr> <tr> <td>Fire</td><td><b>911</b></td></tr> <tr> <td>Wildlife Assistance</td><td>852-0350</td></tr> <tr> <td>Search &amp; Rescue Assistance (if stranded away from navigable roads)</td><td>852-2808</td></tr> </tbody> </table>	Emergency	Dial	Ambulance (medical assistance)	<b>911</b>	Fire	<b>911</b>	Wildlife Assistance	852-0350	Search & Rescue Assistance (if stranded away from navigable roads)	852-2808
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Wildlife Assistance	852-0350										
Search & Rescue Assistance (if stranded away from navigable roads)	852-2808										

6	Public Safety (Police)	<b>854-3783</b>
7	Notify one of the following in the priority given: the Site Program Manager, the Site ES&H Coordinator or the Site Facility Manager designee and/or the 6200 ES&H coordinator. NSA Site Manager: Bernie Zak (505) 845-8631 (w) (505) 281-2664 (h)  Site ES&H Coordinator: Wayne Einfeld (505) 845-8314 (w) (505) 298-4258 (h) (505) 263-5420 (m)  Site Facility Manager: Walter Brower (907) 852-1436 (m)  Sandia ES&H Coordinator: Jaci Hernandez (505) 844-6576 (w)	

### Emergency Actions

In the event of an emergency in the **immediate vicinity of Atqasuk** (including the Atqasuk CART facility), carry out the following procedures:

Step	Action						
1	Determine extent and degree of emergency.						
2	Call local assistance as necessary (The 911 number in Atqasuk is linked to dispatchers in Barrow. They in turn can communicate with law enforcement and fire fighting personnel in Atqasuk, the hospital in Barrow, the health clinic in Atqasuk, as well as North Slope Borough Search and Rescue for medivac services as required) <table border="1"> <thead> <tr> <th>Emergency</th><th>Dial</th></tr> </thead> <tbody> <tr> <td>Ambulance (medical assistance)</td><td><b>911</b></td></tr> <tr> <td>Fire</td><td><b>911</b></td></tr> </tbody> </table>	Emergency	Dial	Ambulance (medical assistance)	<b>911</b>	Fire	<b>911</b>
Emergency	Dial						
Ambulance (medical assistance)	<b>911</b>						
Fire	<b>911</b>						
3	Notify one of the following in the priority given: the Site Manager, the Site ES&H Coordinator or the Site Facility Manager designee and/or the 6200 ES&H coordinator. NSA Site Manager: Bernie Zak (505) 845-8631 Site ES&H Coordinator: Wayne Einfeld (505) 845-8314 Site Facility Manager: Walter Brower (907) 852-1436 Sandia ES&H Coordinator: Jaci Hernandez (505) 844-6576						

## 8.0 WASTE DISPOSAL

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### **Waste Disposal**

Waste disposal procedures will conform to the site landlord's procedures and must also be consistent with local, state and federal regulations. (NOAA is the landlord on NOAA/CMDL land; UIC Real Estate is the landlord at UIC-NARL; and Atqasuk Corporation is the landlord at Atqasuk) Consult the Site ES&H Coordinator for additional guidance on waste disposal.

## 9.0 ES&H REPORTING AND DOCUMENTATION

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### **Records**

The following records are required for ES&H reporting:

- Authorized project participants signature sheets, reviewed semi-annually, signed by each new project participant before performing work (attached).
  - ES&H training records for project personnel (maintained in TEDS).
  - Logs (procedures, unusual occurrences, system updates) as required by Operators Manual.
  - PHSs and other ES&H-related records for the NSA/AAO project facilities shall be maintained according to SNL guidelines.
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### **Plan Review**

The following are procedures for the Plan reviews:

- Annual reviews of this Project ES&H Plan will be performed and all project participants will read and sign-off on any changes or revisions.
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## 10.0 REFERENCES

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### References

The following is a list of applicable documents:

Title	Location
Environment, Safety, and Health Manual, MN471001, Latest Edition	On Sandia IRN web site; copy on zip disk at Barrow Project Office; contact Site ES&H Coordinator for more information
ARM/ NSA/AAO Project Documents	At Sandia; copies at project site (Contact NSA Site Manager)
DOE Order 232.1 Occurrence Reporting	On Sandia IRN web site; available at ARM/NSA web site At Sandia; attached (Contact ESH Coordinator)

### Other References

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## 11.0 APPENDICES

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### Appendices

ARM/NSA Safety Briefing  
Cold Weather Hazards  
Alternate Buddy System  
Activity Specific Firearms Safety Plan  
Bear Safety Plan  
ARM/NSA Vehicle Use Policy  
DOE Order 232.1 occurrence reporting excerpt with occurrence reporting instructions

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## 12.0 AUTHORIZED PROJECT PARTICIPANTS LIST

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### Authorized Project Participants List

By my signature below, I affirm that I have read and understand this ES&H Standard Operating Procedure (ES&H SOP) entitled: "North Slope of Alaska and Adjacent Ocean (NSA/AAO) Climate Project Operating Plan," as well as all appendices relevant to my work assignment (as determined by the Site ES&H Coordinator), and I agree to operate within and adhere to the stated policies. Additional signatures on separate faxed signature sheets (attached).

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Name (printed)

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Signature

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Org.

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Date

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Name (printed)

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